

IN THE CLAIMS

Please add the new claims 9 through 73, as follows:

1 9. A method of color display adjustment, comprising:
2 selecting a range of temperatures according to maximum and minimum color temperature
3 values;
4 inputting a user selected value; and
5 determining color gain and cut-off data according to said user selected value, said maximum
6 color temperature and said minimum color temperature.

1 10. The method of claim 9, further comprising of converting said color gain and cut-off
2 values to analog signals.

1 11. The method of color display adjustment of claim 9, further comprising of determining
2 initial color gain and cutoff values corresponding to the color temperature range between maximum
3 and minimum color temperature values before said inputting said user selected value.

1 12. A method of color display adjustment, comprising:
2 selecting a range of temperatures according to maximum and minimum color temperature
3 values;

4 inputting a user selected value within said range; and
5 determining color gain and cut-off data according to said user selected value, said maximum
6 color temperature and said minimum color temperature.

1 13. A method of color display adjustment, comprising:

2 receiving a user selected value;

3 establishing a range of color temperatures; and

4 calculating gain and cutoff values according to said range and user selected value.

5 14. The method of claim 13, further comprising of converting said color gain and cut-off
6 values to analog signals.

7 15. A method of color display adjustment, comprising:

8 setting a range of color temperature values;

9 determining color gain and cutoff data corresponding to minimum and maximum color
10 temperature values in said range of color temperature values;

11 storing said color gain and cutoff data;

12 entering a color temperature value by a user;

13 reading said color gain and cut-off values corresponding to said range; and

14 calculating color gain and cut-off values according to said entered color temperature value.

1 16. A method of obtaining color temperature data for a color curve control circuit,
2 comprising:
3 providing a range of temperatures between a maximum and a minimum temperature;
4 providing a gain and cutoff data according to said minimum temperature;
5 providing a slope of a temperature curve; and
6 calculating color temperature data corresponding to a selected temperature according to said
7 slope of said temperature curve.

11 17. The method of claim 16, with the slope of said temperature curve being a
21 predetermined value set during manufacture according to properties of a video display.

26 18. The method of claim 16, with said color temperature data being red temperature data,
2 green temperature data, and blue temperature data.

1 19. The method of claim 16, with said gain being a red gain, a green gain and a blue gain.

1 20. The method of claim 16, with said cutoff being a red cutoff, a green cutoff, and a blue
2 cutoff.

1 21. The method of claim 16, further comprising of converting said color temperature data
2 into an analog signal.

1 22. The method of claim 16, further comprising formulas for calculating said color
2 temperature data being:

3
$$R_x = (R_{\min} \times (T_{\text{MAX}} - x_c) + R_{\max} \times (x_c - T_{\text{MIN}})) / (T_{\text{MAX}} - T_{\text{MIN}});$$

4
$$G_x = (G_{\min} \times (T_{\text{MAX}} - x_c) + G_{\max} \times (x_c - T_{\text{MIN}})) / (T_{\text{MAX}} - T_{\text{MIN}}); \text{ and}$$

5
$$B_x = (B_{\min} \times (T_{\text{MAX}} - x_c) + B_{\max} \times (x_c - T_{\text{MIN}})) / (T_{\text{MAX}} - T_{\text{MIN}});$$

6 wherein R_x , G_x , B_x corresponds to the color temperature of a red, green, and blue color
7 signals respectively, R_{\min} , G_{\min} , B_{\min} corresponding to a minimum value of the color temperature
8 of the red, green, and blue color signals respectively, R_{\max} , G_{\max} , B_{\max} corresponding to a maximum
9 value of the color temperature of the red, green, and blue color signals respectively, T_{MAX}
10 corresponding to the maximum temperature in the range of temperature, and T_{MIN} corresponding
11 to the minimum temperature in the range of temperature.

1 23. A method of adjusting color on a monitor, comprising:
2 providing a slope of a temperature curve representing the gain of each color at a selected
3 temperature;
4 providing both a temperature sensor detecting a temperature and a manual switch manually
5 selecting a temperature;

6 inputting a temperature in accordance with one of the temperature sensor and said manual
7 switch; and
8 calculating said gain of each color in response to said temperature.

1 24. A method, comprising:
2 entering values to change the colors on the screen of a video monitor;
3 processing color signals corresponding to color temperature using stored color temperature
4 values and a color curve control program in order to change the colors on the screen according to
5 signals received by the entering values, and generating digital color gain signals and digital color
6 cutoff signals; and
7 converting the digital color gain signals and the digital cutoff signals from the processing
8 color signals into analog gain signals and analog cutoff signals.

1 25. The method of claim 24, further comprising:
2 generating on-screen display signals describing a procedure of transmitting the display values
3 from entering values to processing the values, and changing the colors on the screen using said
4 display values; and
5 supplying selectively the on-screen display signals for display.

1 26. The method of claim 24, with the entering values further comprising:

2 automatically sensing ambient temperature of the video monitor, and generating a
3 temperature signal automatically changing a color of the screen according to the temperature of the
4 video monitor; and
5 entering manually temperature values indicating a desired color to change the color of the
6 screen.

1 27. The method of claim 24, further comprising:
2 generating amplified red, green and blue video color signals by receiving red, green and blue
3 video color signals from a computer and amplifying said red, green and blue video color signals in
4 response to said analog gain signals;
5 generating red, green and blue on-screen display signals describing a procedure of
6 transmitting the display values from the entering the values to the processing the color signals, and
7 changing the colors on the screen using said display values;
8 supplying selectively the amplified red, green and blue video signals and the red, green and
9 blue on-screen display signals transmitted by the generating red, green and blue on-screen display
10 signals; and
11 amplifying, in response to said analog cutoff signals, one of the amplified red, green and blue
12 video signals and the red, green and blue on-screen display signals selectively supplied.

1 28. A method, comprising:

2 entering temperature information;

3 generating digital red, green and blue video gain signals and digital red, green and blue video
4 cutoff signals by converting the temperature information into a digital signal, and processing color
5 signals corresponding to the temperature information using stored color temperature data and a color
6 curve control program;

7 converting the digital red, green and blue video gain signals and the digital red, green and
8 blue video cutoff signals from a microcomputer into analog red, green and blue video gain signals
9 and analog red, green and blue video cutoff signals;

10 generating amplified red, green and blue video signals by receiving red, green and blue video
11 color signals from a computer and amplifying said red, green and blue video color signals in
12 response to said analog red, green and blue video gain signals; and

13 generating amplified red, green and blue video display signals, for display on a color
14 monitor, by receiving the amplified red, green and blue video signals generated by the generating
15 amplified red, green and blue video signals and amplifying the amplified red, green and blue video
16 signals in response to said analog red, green and blue video cutoff signals.

1 29. The method of claim 28, further comprising:

2 generating red, green and blue on-screen display signals describing a procedure for inputting
3 said temperature information; and

4 supplying selectively the amplified red, green and blue video signals generated by said

5 generating amplified red, green and blue video signals and the red, green and blue on-screen display
6 signals transmitted to said generating amplified red, green and blue video display signals.

1 30. The method of claim 28, with the entering temperature information further
2 comprising of selecting a manual mode for manually inputting the temperature information.

1 31. The method of claim 30, further comprising:
2 generating red, green and blue on-screen display signals describing a procedure for inputting
3 said temperature information during said manual mode; and
4 selectively supplying the amplified red, green and blue video signals generated by said
5 generating amplified red, green and blue video signals by receiving red, green and blue video color
6 signals from a computer and the red, green and blue on-screen display signals transmitted by the
7 generating red, green and blue on-screen display signals to said generating amplified red, green, and
8 blue video display signals, for display on a color monitor.

1 32. A method, comprising:
2 setting a temperature range;
3 determining the gains and cutoff values of a plurality of color data signals, each one of the
4 color data signals being a distinct spectral component, said plurality of color data signals forming
5 a color video image when combined, the plurality of color data signals including a first color data

6 signal, a second data signal, and a third data signal corresponding to a minimum temperature value
7 and maximum temperature value in said set temperature range;
8 entering a temperature; and
9 reading gains and cutoff values of the first, second, and third color data signal corresponding
10 to said temperature range.

1 33. The method of claim 32, further comprising of determining x_c corresponding to the
2 input temperature from the following formula with color curve slope of value S:

3
$$x_c = T - (x - T_{len}) \times (x + T_{len}) \times S;$$

4 with T corresponding to a predetermined temperature, x corresponding to a temperature
5 substituted for a medium temperature, T_{len} corresponding to the range of temperatures, and S
6 corresponding to the slope of the temperature curve.

1 34. The method of claim 33, further comprising of determining color temperature data
2 for each one of the first, second, and third color data signals according to the following formula:

3
$$A_x = (A_{min} \times (T_{MAX} - x_c) + A_{max} \times (x_c - T_{MIN})) / (T_{MAX} - T_{MIN});$$

4 wherein A_x corresponds to the color temperature of one of the color data signals, A_{min}
5 corresponds to a minimum value of the color temperature of one of the color data signals, A_{max}
6 corresponding the a maximum value of the color temperature of one of the color data signals,
7 T_{MAX} corresponding to the maximum temperature in the range of temperature, T_{MIN}

8 corresponding to the minimum temperature in the range of temperature.

1 35. The method of claim 34, further comprising of determining gain and cutoff values
2 of each one of the video components according to A_x with respect to the inputted temperature.

1 36. The method of claim 35, further comprising of converting the gain and cutoff values
2 from digital to analog.

1 37. The method of claim 36, further comprising of determining whether the color
2 displayed on the screen is the desired color according to the gain and cutoff values.

1 38. The method of claim 37, with the first color data signal being a red video signal, the
2 second color data signal being a blue video signal, and the third color data signal being a green video
3 signal.

1 39. A color curve control circuit, comprising:
2 a data input unit selectively entering values to change the colors on the screen of a video
3 monitor; and
4 a microcomputer processing color signals corresponding to color temperatures including a
5 color curve control program generating digital color gain signals and digital color cutoff signals

6 using a selected range of color temperatures according to signals received by said data input unit.

1 40. The color curve control circuit of claim 39, further comprising a digital to analog
2 converter for converting the digital color gain signals and the digital cutoff signals from the
3 microcomputer into analog gain signals and analog cutoff signals.

1 41. The circuit according to claim 39, further comprising an on-screen display unit, for
2 generating on-screen display signals describing a procedure of transmitting the display values from
3 the data input unit to the microcomputer, and changing the colors on the screen using said display
4 values.

1 42. The circuit according to claim 41, further comprising a multiplexer for selectively
2 supplying the on-screen display signals transmitted by the on-screen display unit.

1 43. The circuit according to claim 39, further comprising an on-screen display unit
2 generating red, green, and blue on-screen display signals to display on the screen from data
3 transmitted from the microcomputer.

1 44. The circuit according to claim 43, further comprising a multiplexer selecting either
2 the red, green, and blue video signals from a video pre-amplifier or the red, green and blue on-screen

3 display signals from the on-screen display unit in response to an enable signal from the on-screen
4 display unit.

1 45. The circuit according to claim 39, with the microcomputer generating on-screen
2 display values for an on-screen display unit, the on-screen display values including information on
3 the color temperature signal selected by a user for transmission to the on-screen display unit to be
4 displayed and viewed by the user.

1 46. The circuit according to claim 39, further comprising an on-screen display unit
2 displaying the color temperature selected by a user through said data input unit, the on-screen display
3 unit receiving horizontal and vertical sync signals, from the data inputted from the microprocessor
4 to the on-screen display unit, the on-screen display unit outputting on-screen display signals for each
5 of the color signals, and an on-screen display enable signal in synchronization with the horizontal
6 and vertical sync signal.

1 47. The circuit according to claim 46, with the on-screen display enable signal being
2 generated only when a color correction mode is selected by a user using a data input unit.

1 48. The circuit according to claim 46, with the color signals being displayed according
2 to a current gain and cutoff signals when there is no on-screen display enable signal.

1 49. The circuit according to claim 39, further comprising a plurality of first amplifier
2 units for each color component of the color signals, the color signals being amplified to the levels
3 of the gain signals in each color component of the color signals from the digital to analog converter.

1 50. An apparatus, comprising:
2 a data input unit selectively entering values manually or automatically to change the colors
3 on the screen of a video monitor;
4 a microcomputer processing a plurality of color data signals by using color temperature data
5 corresponding to the plurality of color data signals, the color temperature data computed by said
6 microcomputer according to a selected range of color temperatures and the signals received from the
7 data input unit; and
8 a digital to analog converter for converting the digital color gain signals and the digital cutoff
9 signals from the microcomputer into analog gain signals and analog cutoff signals.

1 51. The apparatus of claim 50, further comprising:
2 a first amplifier for amplifying the plurality of color data signals according to the respective
3 gain signals for each on the color data signals;
4 an on-screen display unit generating an on-screen display signal for each one of the plurality
5 of color data signals and an on-screen display enable signal;

6 a multiplexer selectively supplying the amplified color data signals from the first amplifier
7 and the plurality of on-screen display signals from the on-screen display unit; and
8 a second amplifier for amplifying the plurality of color data signals amplified by the first
9 amplifier or the plurality of on-screen display signals, transmitted by the multiplexer, according to
10 the cut off levels for each of the plurality of color data signals generated by the digital to analog
11 converter.

1 52. The apparatus of claim 50, further comprising an on-screen display unit generating
2 an on-screen display signal for each one of the plurality of color data signals and an on-screen
3 display enable signal.

1 53. The apparatus of claim 51, with the on-screen display signals for each one of the
2 plurality of color data signals being transmitted to the second amplifier in response to the on-screen
3 display enable signal.

1 54. The apparatus of claim 50, further comprising an on-screen display unit generating
2 an on-screen display signal including information on the color temperature signal selected by the
3 user.

1 55. The apparatus of claim 51, with the multiplexer being turned on by the on-screen

2 display enable signal to transmit the on-screen display signals from amplifiers of the multiplexer to
3 the second amplifying unit.

1 56. The apparatus of claim 55, with the on-screen display enable signal being generated
2 when the data input unit selectively enters values to change the colors on the screen of the video
3 monitor.

1 57. The apparatus of claim 51, with the multiplexer further comprising a plurality of
2 operational amplifiers, each one of the plurality of operational amplifiers corresponding to an on-
3 screen display signal for a corresponding one of the color data signals.

1 58. The apparatus of claim 51, with the second amplifier amplifying the plurality of color
2 data signals or the on-screen display signals according to the levels of the color cutoff signals for
3 each of the color data signals transmitted by the digital to analog converter.

1 59. The apparatus of claim 50, with the microcomputer including a color curve program
2 adjusting the color using a color curve with the range of temperatures established according to a
3 preset maximum temperature and minimum temperature.

1 60. The apparatus of claim 50, with the microcomputer computing the color temperature

data by using a maximum and minimum temperatures of the selected range of color temperatures.

61. A method of displaying color adjustment in a display monitor stored in a microcomputer, comprising:

receiving a user selected color temperature value;

determining a color temperature data according to a user selected color temperature value, a corresponding color curve and a predetermined range of color temperature values; and

determining color gain and cut-off values corresponding to said user selected color temperature value according to said color temperature data.

62. The method of claim 61, further comprising of converting said color gain and cut-off values to analog signals.

63. A computer storage medium having stored thereon a set of instructions implementing a method of displaying color adjustment in a display monitor having an associated color curve and a predetermined range of color temperatures with a maximum value and a minimum value, said set of instructions comprising one or more instructions for:

receiving a user selected color temperature value;

determining a color temperature data based on said user selected color temperature value, said associated color curve and said predetermined range;

8 determining color gain and cut-off values corresponding to said user selected color
9 temperature value based on said color temperature data; and
10 converting said color gain and cutoff values to analog signals.

1 64. An apparatus, comprising a microcomputer including a memory for storing
2 instructions for displaying and adjusting color in a display monitor with an associated color curve,
3 a predetermined range of color temperatures with a maximum value and minimum value, the
4 instructions comprising of receiving a user selected color temperature value, determining a color
5 temperature data based on said user selected color temperature value, said associated color curve and
6 said predetermined range, determining color gain and cut-off values corresponding to said user
7 selected color temperature value based on said color temperature data.

1 65. A set of instructions implementing a method of displaying color adjustment in a
2 display monitor having an associated color curve and a predetermined range of color temperatures
3 with a maximum value and a minimum value stored, said method comprising:
4 receiving a user selected color temperature value;
5 determining a color temperature data based on said user selected color temperature value,
6 said associated color curve and said predetermined range stored in said microcomputer;
7 determining color gain and cut-off values corresponding to said user selected color
8 temperature value based on said color temperature data stored in said microcomputer; and

9 converting said color gain and cutoff values to analog signals.

1 66. An apparatus, comprising a microcomputer storing instructions for displaying and
2 adjusting color in a display monitor with an associated color curve, a predetermined range of color
3 temperatures with a maximum value and minimum value, the instructions comprising of receiving
4 a user selected color temperature value, determining a color temperature data based on said user
5 selected color temperature value, said associated color curve and said predetermined range,
6 determining color gain and cut-off values corresponding to said user selected color temperature value
7 based on said color temperature data.

1 67. An apparatus, comprising of a unit storing instructions for displaying and adjusting
2 color in a display monitor with an associated color curve, a predetermined range of color
3 temperatures with a maximum value and minimum value, the instructions comprising of receiving
4 a user selected color temperature value, determining a color temperature data based on said user
5 selected color temperature value, said associated color curve and said predetermined range,
6 determining color gain and cut-off values corresponding to said user selected color temperature value
7 based on said color temperature data.

1 68. A stored program providing a method of displaying color adjustment in a display
2 monitor having an associated color curve and a predetermined range of color temperatures with a

3 maximum value and a minimum value, said method comprising:

4 receiving a user selected color temperature value;

5 determining a color temperature data based on said user selected color temperature value,

6 said associated color curve and said predetermined range;

7 determining color gain and cut-off values corresponding to said user selected color
8 temperature value based on said color temperature data; and

9 converting said color gain and cutoff values to analog signals.

10 69. A method, comprising:

11 receiving a user selected color temperature value;

12 determining a color temperature data based on said user selected color temperature value,
13 said associated color curve and said predetermined range;

14 determining color gain and cut-off values corresponding to said user selected color
15 temperature value based on said color temperature data; and

16 converting said color gain and cutoff values to analog signals.

17 70. The method of claim 69, with said steps being implemented by a stored program.

18 71. The method of claim 70, with said program being stored in a memory.

1 72. The method of claim 70, with said program being stored in a memory of a
2 microcomputer.

1 73. The method of claim 70, with said program being stored in a storage medium
2 comprised from a microcomputer.

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